mainly with the explorations which have been carried on in various parts of the world.

"The year," he said, "of which I am about, with your permission, to give some account, has not been, so far as geographical discoveries are concerned, a very brilliant or sensational one. Brilliant and sensational years are, alas! likely to grow fewer and fewer as the globe we inhabit becomes ever better known to us. If, however, the year has not been made memorable by much *extensive* exploration it has put to its credit no small amount of *intensive* exploration. A good many gaps in our knowledge have been filled up, and a great deal of solid useful work accomplished. All this healthy activity has been represented in our Proceedings, and much of it has found its way to our Fellows through the papers which have been read in this theatre. Many of these have been extremely interesting. I may mention particularly the account of Messrs. Jackson and Gedge's journey to Uganda, Colonel Tanner's observations on the Himalayan Range, and Mr. Pratt's journey to Szechuen. These last were illustrated, as it will be remembered, by drawings and by photographs of exceptional merit, which were examined carefully by large numbers after our meetings closed. As you will have learnt from the report of the auditors, the total assets of the Society have considerably increased, and we are in a position to give most efficient assistance to any thoroughly well considered schemes which are laid before us. I am very sure, however, that the Fellows will consider that, although we are rich, it is none the less our duty to scrutinize carefully all proposals which are made to us, and to see that the money which they give so generously is applied only to really promising objects. Such we considered to be Mr. Ramsay's explorations in Asia Minor, and Mr. Theodore Bent's examination of the remarkable ruins at Zimbabye in South Africa. Instruments to the value of over £600 have been lent during the past year to intending travellers, and thirty-six gentlemen have received instruction from Mr. Coles, partly at the expense of the Society, for the purpose of making them more efficient as explorers. Our duties dividing themselves into two great classes—the acquisition of knowledge and the diffusion of knowledge—I think the Society will hail with pleasure a considerable increase of our expenditure under the head of 'Scientific Purposes,' which amounted for last year to nearly £600. That sum included £178 for the purpose just alluded to, £120 for the promotion of geographical education in connection with the Training Colleges, the University Local Examinations, and the Oxford University Extension Movement, and a contribution of £150 towards the salaries of each of the Geographical Lecturers at the Universities of Oxford and Cambridge. I am happy to be able to report that our efforts to promote geographical education in the first of these great national institutions are being crowned with success, thanks to the enlightened views now prevailing there, to the powerful assistance of the Warden of Merton and other friends in high place, and to the zeal and high intelligence of Mr. Mackinder, who is rapidly winning not only golden opinions for himself, but an excellent place for his science on the banks of the Isis. Negotiations are now in progress which will, I hope, result in the establishment of a Travelling Scholarship at the joint expense of our Society and of the University of Oxford. Our Fellows will, no doubt, have observed that efforts are being made to have the Ordnance Survey pushed on more rapidly than hitherto, as well as to make more generally accessible to the public the results of so much well-directed labour. They will approve, I feel sure, of the Society's assisting these efforts in all legitimate and reasonable ways."

The President then proceeded to review the exploring work of the year, most of which has already been dealt with in NATURE.

PARKA DECIPIENS.[1]

THIS very interesting fossil is derived from various localities in Scotland, all of which are believed to be Lower Devonian. It was first described in 1831 by Dr. Fleming, and since then has been noticed on several occasions, and variously regarded as the spawn of Mollusca or Crustaceans, and as of vegetable origin.

The material upon which the present observations are based was collected by Mr. James Reid[1] and Mr. Walter Graham, both of whom have offered many valuable suggestions as to the probable nature and affinities of the fossil. As found, the *Parka decipiens* usually consists of oval masses bearing rounded impressions or disk-like bodies of carbonaceous matter. Associated with these are also stems and linear leaves of two dimensions, and a third form having a general resemblance to Pachytheca, which is found in the same beds, and differing from it in having a more discoid form, and being devoid of structural markings.

The authors show that the fossil is probably a rhizocarp allied to *Pilularia*, and that there are at least three forms recognizable, of which one is referred to the species, and the other two to varieties. The views thus stated are based upon differences of size and upon the fact that certain of the disk bodies show spores of two kinds, and in some cases prothalli in various stages of development, all derived from the same sporocarp.

The paper is illustrated by a plate of figures.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—In the list of the Mathematical Tripos (Part II.) Mr. Bennett, of St. John's, the Senior Wrangler, Mr. Crawford, of King's, the fifth Wrangler, and Miss Philippa G. Fawcett, "above the Senior Wrangler," are placed in the first division of the First Class.

SCIENTIFIC SERIALS.

THE *American Meteorological Journal* for May contains the following articles:—Cold waves, by Prof. T. Russell. In the report of the Chief Signal Officer for 1889, he expressed the view that the origin of cold waves was due to mixture of upper and lower air causing cooling of the layer next to the ground. On further examination of the subject, in connection with the observations at mountain stations, he admits the incorrectness of those views, and states that, while it is essential to connect the low temperature and high pressure in some way, the cooling of the ground by radiation, and of the air by contact and conduction, will not completely explain the cause of cold waves.—How could the Weather Service best promote agriculture?, by M. W. Harrington. The American Weather Service has hitherto devoted itself more particularly to the interests of commerce, while the State Services have had the interests of farmers more distinctly in view. What the farmer wants to know is, where and when a local shower will fall. While the complete solution of this problem may be impossible, the approximate solution lies in the multiplication of local forecasting stations, and in the intelligent use of the indications of the Central Office, combined with the indications which he can himself observe. The author recommends more attention to climatology as distinct from weather changes, and to the relations between plants, soil, and meteorology.—Is the influenza spread by the wind?, by H. H. Hildebrandsson. This is a translation, by the author, from an article in the Journal of the Medical Society at Upsala, and is, practically, a reply to an article in NATURE of December 19, 1889, where it is stated that the malady is probably spread by the wind. The author shows, by a map and table, the places and dates at which influenza occurred in Sweden, from inquiries of medical men. The result of the research goes to show that the influenza is propagated by infection, that it is conducted from place to place through human circulation, and that the time of incubation is two to three days. The state of the weather seemed to have no influence on the spread of the malady; in fact, it raged with the same severity in countries possessing very different climates, and during very different weather conditions.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 4.—"On a Determination of the Mean Density of the Earth and the Gravitation Constant by means of the Common Balance." By J. H. Poynting, D.Sc., F.R.S., Professor of Physics, Mason College, Birmingham.

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[1] "Notes on Specimens from the Collections of Messrs. Graham and Reid," by Sir Wm. Dawson, LL.D., F.R.S., and D. P. Penhallow, B.Sc., F.R.S.C. Abstract of a paper read before the Royal Society of Canada, May 1891.

[1] Mr. Reid acknowledges his indebtedness to Mr. Langlands, the lessee of Myreton quarries, whose kind permission to examine these quarries was so freely granted.

In a paper printed in the Proceedings of the Royal Society, No. 190, 1878, an account was given of some experiments undertaken in order to test the possibility of using the common balance in place of the torsion balance in the Cavendish experiment. The success obtained seemed to justify the continuation of the work, and this paper contains an account of an experiment carried out with a large bullion balance, in place of the chemical balance used in the preliminary trials. The work has been carried out at the Mason College, Birmingham.

The Principle of the Experiment.—The immediate object of the experiment may be regarded as the determination of the attraction of one known mass on another. If two spheres, of masses M and M′, have their centres a distance d apart, the attraction is, according to the law of gravitation, GMM'/d^2, where G is the gravitation constant. Astronomy justifies the law in certain cases as regards M'/d^2, but does not give the value of G or M, except in the product GM. To find G we must measure GMM'/d^2 in some case in which both M and M′ are known. Having found G, we may determine the mean density of the earth, for, assuming that it is a sphere of radius R, the weight of any mass M′ at its surface is

$$G \times \tfrac{4}{3}\pi R^3 \Delta M'/R^2$$
$$= \tfrac{4}{3} G\pi R \Delta M'.$$

But if g is the acceleration of gravity the weight of M′ may be expressed as $M'g$. Equating these values, we get

$$\Delta = \tfrac{3}{4}\frac{g}{G\pi R}.$$

Method of Using the Common Balance.—With the length of beam used (about 123 cm.) a differential method was applicable, in which the attraction on the beam was eliminated. Two spherical masses of lead and antimony, about 21 kilos. each, were hung from the two arms of the balance, so that their centres in the first position were about 30 cm. above the centre of a large attracting mass, a sphere of lead and antimony about 153 kilos., placed on a turntable, so that it could be brought in turn immediately under either of the suspended attracted masses. A balancing mass of half the weight, and at double the distance from the centre of the turntable, was found necessary, so that the centre of gravity should be in the axis of rotation. Before this was used, the ground level was seriously altered by the rotation of the turntable. The attraction of the balancing mass was calculated and allowed for.

The alteration in the weights of the attracted masses, due to the motion of the attracting masses from one side to the other, was the quantity to be measured. When this was determined in the lower position of the attracted masses they were raised to about double the distance, and the attraction again determined. The difference eliminated the pull on the beam, suspending wires, &c. To lessen the effect of want of homogeneity or sphericity in the masses, or of want of symmetry in the turntable, the masses were all inverted and changed over each to the other side, and the weighings repeated.

The position of the beam was determined by the reflection of a scale in a mirror used with "double suspension." The mirror was suspended by two silk threads, one attached to the end of the ordinary pointer about 60 cm. below the central knife edge, the other parallel to it, being attached to a fixed support. The mirror turned through an angle about 150 times as great as that through which the beam turned, and one scale division corresponded to an angle of tilt in the beam of about 2/15ths of a second.

The value of a scale division was determined by the use of two equal riders which could be placed on or taken off wire frames representing the scale pans of a small subsidiary beam, 2·5 cm. long, fixed parallel to and at the centre of the large beam. When one rider was placed on one supporting frame the other was at the same instant lifted off the other frame.

The balance was left free throughout a series of weighings, and no moving parts of the apparatus were connected with the case.

The values obtained are as follows:—

$$\text{The gravitation constant } G = \frac{6{\cdot}6984}{10^8}.$$

$$\text{Mean density of the earth } \Delta = 5{\cdot}4934.$$

In the paper a description is given of a new form of cathetometer used to measure the diameters of the masses.

"Quadrant Electrometers." By W. E. Ayrton, F.R.S., J. Perry, F.R.S., and W. E. Sumpner, D.Sc.

In 1886 it was noticed, on continuously charging up the needle of Sir William Thomson's bifilar suspension quadrant electrometer No. 5, made by Messrs. White, of Glasgow, and in use at the laboratories at the Central Institution, that the deflection of the needle, when the same P.D. (potential difference) was maintained between the quadrants, instead of steadily increasing, first increased, and then diminished; so that, both for a large charge on the needle as well as for a small, the sensibility of the instrument was small. A similar effect had been described by Dr. J. Hopkinson, in the Proceedings of the Physical Society, vol. vii. Part 1, for the previous year, and the explanation he gives of this curious result is, that if the aluminium needle be below the centre of the quadrants, the downward attraction of the needle, which varies with the square of the needle's charge, increases the pull on the bifilar suspension, and so for high charges more than compensates for the increased deflecting couple due to electrical action. On raising, however, the needle of our electrometer much above the centre of the quadrants, the anomalous variation of sensibility of the instrument with increase of charge in the needle did not disappear; and even when the needle was raised so that it was very close to the top of the quadrants, and when, if Dr. Hopkinson's explanation were correct, the sensibility (or deflection corresponding with a given P.D. between the quadrants) ought to have been very great for a large charge on the needle, it was, on the contrary, found to be small.

The needle was carefully weighed, with the platinum wire attached and the weight dipping into the acid, and a calculation was made as to the magnitude of the effect that should arise from the change of the pull of the fibres due to any upward or downward attraction of the needle by the quadrants. This calculation showed that for a P.D. of 3000 volts between the needle and the quadrants, the amount of such attraction was quite unable to account for the observed diminution of sensibility with large charges in the needle. Dr. Hopkinson says in his paper, "Increased tension of the fibres from electrical attraction does not therefore account for the whole of the facts, although it does play the principal part." The experiments that we made at the end of 1886 and beginning of 1887, confirmed by the calculation above referred to, proved that, at any rate in our specimen of the quadrant electrometer, the principal part of the anomalous action was not caused by an increased tension of the fibres, and that therefore some other cause must be looked for to explain the observed results.

We therefore decided to make a complete investigation of the laws connecting the variation of the sensibility of the instrument with the potential of the needle, the distance between the fibres, the distance between the quadrants, and the position of the needle.

The results of the investigation, briefly summed up, are as follows:—

(1) The quadrant electrometer, as made by Messrs. White, although it may be carefully adjusted for symmetry, does not usually even approximately obey the recognized law for a quadrant electrometer when the potential of the needle is altered.

(2) The peculiarities in the behaviour of the White electrometer are due mainly to the electrical action between the guard tube and the needle, and to the slight tilting of the needle that occurs at high potentials.

(3) By special adjustments of the quadrants of the White electrometer, the sensibility can be made to be either nearly independent of the potential of the needle, or to be directly proportional to the potential, or to increase more rapidly than the potential of the needle.

(4) By altering the construction of the instrument, as described, the conventional law for the quadrant electrometer is obtained without any special adjustment of the quadrants beyond that for symmetry, and the instrument is rendered many times as sensitive as the specimen we possess of the White pattern.

Linnean Society, June 4.—Prof. Stewart, President, in the chair.—After nominating as Vice-Presidents Mr. A. W. Bennett, Dr. Braithwaite, Mr. F. Crisp, and Dr. St. G. Mivart, the President took occasion to refer to the loss which the Society had sustained by the recent death of a Vice-President, Prof. P. Martin Duncan, F.R.S. His genial presence at the meetings, no less than his valued contributions to the publications of the Society, would, he felt sure, be missed by everyone.—Sir Walter Sendall, who was present as a visitor, exhibited a curious cocoon of a moth belonging to the genus *Tinea*, and made some remarks on its construction and peculiar coloration.—The President exhibited a case of Lepidoptera and Coleoptera, which he had selected to illustrate some of the more notable secondary sexual characters in insects, and made some interesting explanatory observations.—Dr. John Lowe exhibited some eggs of *Mantis religiosa* which he had found adhering to the underside of stones on mountain-sides in the Riviera.—On behalf of Mr. F. J. Hanbury, Mr. W. H. Beeby exhibited and made remarks on a sterile form of *Ranunculus acris*, on which some criticism was offered by Prof. H. Marshall Ward.—A paper by Mr. M. C. Potter was read, on diseases of the leaf of the cocoa-nut tree. The specimens examined had been received from Ceylon through Dr. Trimen, and in Mr. Potter's opinion the diseases noticed were referable to three causes—namely, to the rays of the sun, to the ravages of insects, and to Fungi. These were separately considered, and descriptions were given of the different appearance which the leaves, thus variously affected, presented. A discussion followed, in which Prof. H. Marshall Ward criticized in some detail the observations which had reference chiefly to Fungi.—Two papers followed by Dr. P. H. Carpenter, on some Arctic *Comatulæ* and on some *Crinoidea* from Madeira, upon which Mr. W. Percy Sladen offered critical remarks.—The President then gave an abstract of a paper which he had prepared on a hermaphrodite mackerel, and exhibited the specimen on which his observations were founded, referring also to the recent cases of hermaphroditism in the trout and cod which had been brought to the notice of the Society. A commentary by Prof. G. B. Howes brought the proceedings to a close.

Edinburgh.

Royal Society, May 18.—The Hon. Lord Maclaren, Vice-President, in the chair.—Dr. Buchan read a paper on the barometer at Ben Nevis Observatory, in relation to the direction and strength of the wind. In arranging the results, Dr. Buchan has referred the direction of the wind to sixteen points of the compass, although the observations are actually made with reference to the thirty-two points. The readings of the barometers at the high level and the low level stations, when reduced to sea-level, exhibit marked differences dependent upon the direction of the wind. The investigation extends over the period of nine months commencing in August last. During that time, all the very high winds have been from the east-south-east and the south-east, these being the directions in which the wind blows freely along the top of the mountain to the Observatory. In eleven cases the wind from these directions attained a speed of 120 miles an hour or more; and the (reduced) barometer at the high level station read about one-sixth of an inch lower than the instrument at the low level station. In no other direction was a higher velocity than 70 miles an hour noted; and in the directions from west to north-north-west, east, and east-north-east, the velocity was never greater than 30 miles an hour. With northerly winds the instruments at the top of the mountain record a much lower speed than that which, from observations of the drift of the clouds, is seen to be reached at a small height above the top of the mountain. The cause of this comparative calm immediately at the top is the impact of the air upon the face of the cliff which lies to the north of the Observatory. The stream lines are thus suddenly deflected upwards. In such cases the depression of the barometer is about three times as great as that which occurs with an equally strong wind from other directions, and indicates the formation of a region of low pressure around the Observatory. A peculiar result which is observed with other directions of the wind is that the (reduced) high level barometric reading exceeds the (reduced) low level reading when the wind blows at about the rate of 5 miles an hour. The reverse is always true when the speed of the wind exceeds that rate, on the one hand, or is extremely small, on the other. This seems to indicate an increase of pressure in air-currents which ascend the mountain, and so may explain the fact that the top of the mountain is frequently clear, while dense cloud is being constantly formed at a short distance above it.—Dr. J. Berry Haycraft gave an account of some experiments which show (1) that the displacements of the heart, which since Harvey's time are supposed to take place with every contraction, do not really occur in the unopened chest, and (2) that the cardiogram has been misinterpreted by physiologists. It is usually supposed that, during each contraction, the heart twists towards the right while its apex moves forward, and, pressing against the wall of the chest, causes the "apex beat." Again, it has been supposed by some that, during expansion, all diameters of the heart are not increased, but that, on the contrary, one diameter is diminished in length. Dr. Haycraft's experiments show that all diameters are increased during expansion, and that all are diminished during contraction. They show also that the motions, above described, do not occur in the unopened chest. The heart, in order that it may be observed in the opened chest, is necessarily separated from its attachments and falls towards the back of the chest (the animal operated upon being supposed to be placed upon its back). During expansion, the heart becomes flaccid, and so is flattened against the back of the chest. The first effect of the stiffening which occurs during the muscular contraction is therefore an elevation of the heart, against gravity, towards the front of the chest. Similarly, if the animal be turned upon one side, the heart, during contraction, moves towards the upper side of the chest; and the "beat" can even be made to take place towards the back. In the unopened chest, the heart on the whole remains in position during contraction, and therefore its boundaries move from the chest walls. But the cardiogram, as usually interpreted, shows that the chest wall is thrown outwards by the impact of the heart during contraction. Dr. Haycraft asserts that this is due to deformation of the heart by pressure of the chest wall when the button of the cardiograph is pressed against the exterior of the chest. The first effect of the muscular contraction and stiffening of the heart is therefore increased pressure against the chest-wall, which gives rise to the up-stroke of the cardiogram. When the cardiograph is made as light as possible, the up-stroke is greatly diminished; but it never entirely vanishes, because the flaccid heart is always slightly distorted by the chest-wall even when the cardiograph is not pressed against it. Dr. Haycraft further shows that the sinuosities, which always appear to a greater or less extent on the cardiogram, are not due to peculiarities in the action of the heart, but are instrumental in their origin, being caused by oscillations which result from the inertia of the cardiograph.—Dr. Hugh Robert Mill read a paper on the physical geography of the Clyde sea area, and the salinity and chemical composition of its waters. He described records, and discussed observations, made by himself and other members of the staff of the Scottish Marine Station. The observations dealt with extend over a period of three years, and their reduction has occupied, in addition, the greater part of two years. In the first part of the paper the author gives a detailed description, illustrated by a bathymetric chart, of the configuration of the Clyde sea area, with a special account of the various loch basins. The area and volume of each of these depressions are calculated, and the area of land which drains into each of them is measured on accurate maps. The rainfall is discussed in detail, and the river discharge is calculated indirectly, tables being drawn up to show the volume of rain water which flowed into each of the lochs during each month of the year. The month of maximum rainfall over most of the area is January, that of minimum rainfall is May. The whole sea area is conveniently divided into two parts—the seaward, of great extent, bordered with comparatively low ground, and lying in a region whose average rainfall is 44 inches; and the landward, made up of deep narrow loch basins, bordered by lofty mountains, and occupying a region whose average rainfall approaches 60 inches. In the latter part of the paper the positions of thirty-four stations (twenty-seven in the landward, and seven in the seaward division), at which observations were regularly made, are described. The method of collecting water samples, and the method of determining the density by means of a *Challenger*-type hydrometer, are given in detail. A record of 850 determinations of density made during twelve trips, which extended over two years, are given in an appendix. Twenty tables are given, which show the relations of salinity to configuration, tides, and rainfall, and which exhibit the relative amounts of pure sea-water and of fresh-water which were present in each of the divisions of the sea area at certain selected times. It was found that the amount of salt present in the water of the Clyde sea area varies with the season, the water being, as a rule, freshest in February, one month after the maximum rainfall, and saltest in July or August, two months after the minimum rainfall. The surface water exhibited the greatest changes, the seasonal variations being more regular at greater depths. Even at the head of lochs 50 or 60 miles distant from the open sea the percentage of pure sea-water present was rarely less than 88; the fresh river-water which poured in in enormous volume after heavy rain rapidly mixing with the sea-water, which was constantly renewed by the tide. So rapid and complete is this process of interchange, that the amount of river-water actually present diluting the water of the Clyde sea area is much less than the amount which passes through it every year, and is not equal to half of the average rainfall. In an average year 1·25 cubic miles of water, 97·5 per cent. of which is pure sea-water, and 2·5 per cent. fresh-water, enters the area at every tide; and a slightly greater amount is withdrawn, the whole being freshened a little so as to contain 2·7 per cent. of its volume of fresh-water. The great saltness of the deep water of the sea lochs, on which their importance as fishing-grounds depends, appears to be due to two causes. One of these is the thorough mixture of the tidal water from bottom to surface as it pours across the shallow bars at the mouths of the lochs. The saltest surface water was always found at flood-tide, off Otter Spit in Loch Fyne, where the salt water welled up from beneath in consequence of the rapid shoaling of the channel. Another cause of thorough mixture is the influence of the wind, which seems to set up a complete vertical circulation. Thus if wind is blowing strongly down Loch Fyne, the freshened surface water is driven out of the loch, and very salt water rises at the head of the loch to take its place. In a down-loch wind the surface water is almost always saltest at the head of the loch, and diminishes in salinity towards the open sea. The paper concludes with a summary of the chemical composition of the water.

PARIS.

Academy of Sciences, June 8.—M. Duchartre in the chair.—On the currents which give rise to cyclones, by M. H. Faye. The views held by Dr. Hann and Prof. Ferrel concerning cyclones and anticyclones are compared. The author believes that cyclones, but not anticyclones, are dynamical phenomena, with which local circumstances of temperature have nothing to do, and he shows that they depend on the general movements of the atmosphere due to Polar cold and equatorial heat. On this point, therefore, M. Faye agrees with Dr. Hann.—Note on the presence of the *Kophobelemnon* in the waters of Banyuls, by M. H. de Lacaze-Duthiers.—The mastodon of Cherichira, by M. Albert Gaudry.—A new chemical balance for rapid weighings, by M. Victor Serrin.—Partial eclipse of the sun on June 6, observed at Nice, by M. Perrotin. With a power of 280, the time of first contact was observed to be 5h. 54m. 26s.; and of second contact, 6h. 53m. 26s. Nice mean time.—Observations of the new asteroid discovered at Nice Observatory on May 16, by M. Charlois. The observations are for May 16 and 25.—Observations of Brooks's comet (1890 II.), made with the great equatorial of Bordeaux Observatory, by MM. G. Rayet and L. Picart. Twenty-three observations for position were made between February 3 and April 29. The comet has been followed from March 27, 1890, to April 29, 1891.—On the theory of shooting-stars, by M. Callandreau. The author develops the equation of condition to be fulfilled by radiant-points belonging to the same family of meteors. According to Mr. Denning's observations, the Perseid radiant-point moves towards the east during the period of activity, a fact indicated as probable by Leverrier in 1871. This is in conformity with the equation of condition, which shows that if the latitude of a radiant-point varies slightly the longitude increases.—On two systems of differential equations, of which the hyperelliptic functions of the first order form the integrals, by M. F. Caspary.—Determination of the mechanical equivalent of heat, by M. Constantin Miculesco. The method adopted was similar in principle to that used by Joule. Thirty-one experiments made with this apparatus gave very accordant results, and the mean of them all give 426·7 as the mechanical equivalent of a calorie in kilogram-metres.—Dielectric properties of mica at high temperatures, by M. E. Bouty. The principal result of the research is that the dielectric constant is almost invariable for rapid alternations.—Application of the principle of the transmission of pressures to widely separated telephone transmitters, by M. P. Germain.—Action of ammonia on some compounds formed with halogen salts of mercury, by M. Raoul Varet. The author has studied the action of ammonia on compounds formed with mercury iodide and metallic cyanides, with the idea of determining the *rôle* of certain compounds of ammonia in double decompositions.—On a new method of preparing silicon chloro-iodides, by M. A. Besson.—On three cases of free development observed in Bryozoas ectoproctæ, by M. Henri Prouho.—On the locusts of Algeria, by M. Charles Brongniart.—On the morphological nature of the phenomena of fecundation, by M. Léon Guignard. It results from the observations that the phenomenon of fecundation consists not only in the copulation of two nuclei of different sexual origin, but also in the fusion of two protoplasms, also of different origin, and represented essentially by the directing spheres of the male and the female cell.—On the inclosures of nephelinic syenites found in the middle of phonolites from Höhgau and in some other beds; conclusions to be drawn from them, by M. A. Lacroix.—Observations of the parallelism of Upper Cretaceous strata of the Western Pyrenees (Lower Pyrenees and Landes), by M. Jean Seunes.—The sympathetic nerve of accommodation for the observation of distant objects, by MM. J. P. Morat and Maurice Doyon.—Researches on the existence of parasitic organisms in diseases of the crystalline lens of the eye of man, and on the possible *rôle* of these organisms in the pathology of certain ocular affections, by MM. Gallippe and L. Moreau.—On the employment of carbon bisulphide dissolved in water for the destruction of Phylloxera, by M. A. Rommier.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Glimpses of Nature: Dr. A. Wilson (Chatto).—Revelation of the Trinity: S. B. G. McKinney (Stock).—Oysters and all about Them, 2 vols.: J. R. Philpots (Richardson).—Die Veränderlichkeit der Temperatur in Österreich: J. Hann (Wien).—Monograph of the British Cicadæ, vol. ii. Part 6: G. B. Buckton (Macmillan).—A Guide-book to Books: edited by E. B. Sargant and B. Whishaw (Frowde).—Our Country's Flowers: W. J. Gordon (Day).—Primo Resoconto dei Risultati della Inchiesta Ornitologica in Italia; Parte Terza ed Ultima Notizie d'Indole Generale: E. H. Giglioli (Firenze).—Chambers's Encyclopædia, vol. vii. (Chambers).—Hand-book of the London Geological Field Glass: H. G. Seeley (Philip).—Teaching in Three Continents: W. C. Grasby (Cassell).—Bulletins de la Société d'Anthropologie de Paris, 4^e fasc. (Paris, Masson).—Journal of the Chemical Society, June (Gurney and Jackson).—Quarterly Journal of Microscopical Science, vol. xxxii. Part 3 (Churchill).

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